

## INTERNATIONAL SEARCH REPORT

PCT/US 03/24938

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 C07D311/36 A61K31/35 A61K31/36 C07D407/12

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 C07D A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data, WPI Data, PAJ, EMBASE

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 031 885 A (MERCK PATENT GMBH) 15 July 1981 (1981-07-15) examples 1,131-175 ---	1,6
X	EP 0 267 155 A (ZYMA SA) 11 May 1988 (1988-05-11) examples 10-14,43a,49-52,58,60a,64,65a ---	1,12
X	WO 91 15483 A (CHINON GYOGYSZER ES VEGYESZET) 17 October 1991 (1991-10-17) examples 4,5,7,9,10 ---	1,5,13
X	WO 93 23069 A (KELLY GRAHAM EDMUND) 25 November 1993 (1993-11-25) the whole document ----	1,6, 12-14 -/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

## \* Special categories of cited documents :

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the International filing date
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- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the International filing date but later than the priority date claimed

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- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*V\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*&\* document member of the same patent family

Date of the actual completion of the International search

21 November 2003

Date of mailing of the International search report

05/12/2003

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 94 23716 A (UNIV TUFTS MED) 27 October 1994 (1994-10-27) the whole document ---	1,6, 12-14
X	WO 95 03293 A (CHINOIN GYOGYSZER ES VEGYESZET ;NOGRADI MIHALY (HU); GOTTSEGEN AGN) 2 February 1995 (1995-02-02)  examples 1,2 ---	1,13
X	WO 96 39832 A (KUNG PATRICK C) 19 December 1996 (1996-12-19) examples 1,10,11,17,18 ---	1,5,6
X	WO 99 48496 A (KELLY GRAHAM EDMUND ;NOVOGEN RES PTY LTD (AU); HUSBAND ALAN JAMES) 30 September 1999 (1999-09-30) the whole document & US 6 599 536 B1 29 July 2003 (2003-07-29) cited in the application ---	1,6, 12-14
X	WO 99 49862 A (UNIV MISSISSIPPI) 7 October 1999 (1999-10-07) cited in the application examples 1,2; table 1 ---	1,5,6,15
X	WO 00 49009 A (NOVOGEN RES PTY LTD ;HEATON ANDREW (AU); KUMAR NARESH (AU)) 24 August 2000 (2000-08-24) examples 1-5,7-12 ---	1,5,6
X	WO 00 62765 A (ASTRAZENECA AB ;BARLAAM BERNARD CHRISTOPHE (US); PISER TIMOTHY MAR) 26 October 2000 (2000-10-26) example 24 ---	1,5,6, 12-14
X	WO 00 62774 A (BANZ WILLIAM J ;WINTERS TODD A (US); PELUSO MICHAEL R (US); SHANAH) 26 October 2000 (2000-10-26) the whole document & US 6 592 910 B1 15 July 2003 (2003-07-15) cited in the application ---	1,12-14
X	WO 01 17986 A (KELLY GRAHAM EDMUND ;NOVOGEN RES PTY LTD (AU); HEATON ANDREW (AU);) 15 March 2001 (2001-03-15) example 1 ---	1,3,6, 12-14
X,P	WO 03 055860 A (CANCER RES TECHNOLOGY LTD ;DRYSDALE MARTIN JAMES (GB); PEARL LAURE) 10 July 2003 (2003-07-10) page 141 -page 151 ---	1,3,6, 12-14
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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CHEMICAL ABSTRACTS, vol. 51, no. 4, 25 February 1957 (1957-02-25) Columbus, Ohio, US; abstract no. 2762g, XP002262157 RN 19725-36-1 & N.K. ANAND ET AL.: J. SCI. IND. RESEARCH, vol. 15b, 1956, page 263 ----	1,6
X	CHEMICAL ABSTRACTS, vol. 53, no. 9, 10 May 1959 (1959-05-10) Columbus, Ohio, US; abstract no. 8128d, XP002262158 RNs 24160-14-3, 15485-81-1 & L. FARKAS ET AL.: CHEM. BER., vol. 91, 1958, pages 2858-2861, ----	1,5,6
X	CHEMICAL ABSTRACTS, vol. 56, no. 12, 11 June 1962 (1962-06-11) Columbus, Ohio, US; abstract no. 14222e, XP002262159 RN 7678-85-5 & K. AGHORAMURTHY ET AL.: J. INDIAN CHEM. SOC., vol. 38, 1961, pages 914-918, ----	1,6
X	CHEMICAL ABSTRACTS, vol. 58, no. 11, 27 May 1963 (1963-05-27) Columbus, Ohio, US; abstract no. 11319c, XP002262160 RN 485-63-2 & J.B. HARBORNE ET AL.: J. ORG. CHEM., vol. 28, 1963, pages 881-882, ----	1,6
X	CHEMICAL ABSTRACTS, vol. 58, no. 5, 4 March 1963 (1963-03-04) Columbus, Ohio, US; abstract no. 4504b, XP002262161 RNs 97318-31-5, 97340-30-2 & D. CHAKRAVARTI ET AL.: SCI. CULT., vol. 28, 1962, pages 242-243, ----	1,3,6
		-/-

## INTERNATIONAL SEARCH REPORT

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; KALRA, V. K. ET AL: "Synthesis of 2'-hydroxyisoflavones" retrieved from STN Database accession no. 68:104908 XPOO2262162 abstract; RN 18086-28-7 &amp; INDIAN JOURNAL OF CHEMISTRY (1967), 5(7), 287-90 ,</p> <p>---</p>	1,6
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; CHUDGAR, N. K. ET AL: "Studies in isoflavones. I. Bromination, iodination, and nitration of 7-hydroxyisoflavone" retrieved from STN Database accession no. 69:77068 XPOO2262163 cited in the application abstract; RNs 19816-31-0, 19816-36-5, 19816-42-3, 19816-46-7 &amp; JOURNAL OF THE INSTITUTION OF CHEMISTS (INDIA) (1967), 39(5), 203-8 ,</p> <p>---</p>	1-3,6
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; CHANG, HERBERT H. S. ET AL: "Excretion of radioactive daidzein and equol as monosulfates and disulfates in the urine of the laying hen" retrieved from STN Database accession no. 82:152486 XPOO2262164 abstract; RN 55230-90-5 &amp; CANADIAN JOURNAL OF BIOCHEMISTRY (1975), 53(2), 223-30 ,</p> <p>---</p>	1,6
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## C(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; ABDULLAEV, KH.: "Antitrichomonas activity of different groups of substances isolated from the flora of Central Asia" retrieved from STN Database accession no. 91:49295 XP002262213 abstract; RN 56581-76-1 &amp; FARMAKOL. PRIR. VESCHESTV (1978), 103-7. EDITOR(S): SADRITDINOV, B. S. PUBLISHER: IZD. "FAN" UZB. SSR, TASHKENT, USSR. ,</p> <p>---</p>	1,5
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; SHAO, GUO-XIAN ET AL: "Studies on the synthesis and structure-antihypoxia activity relations of daidzein, an active principle of Pueraria pseudohiruta, and its derivatives" retrieved from STN Database accession no. 94:174809 XP002262165 abstract; RN 77316-78-0 &amp; YAOXUE XUEBAO (1980), 15(9), 538-47 ,</p> <p>---</p>	1,4
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; KHILYA, V. P. ET AL: "Synthetic analogs of natural isoflavones" retrieved from STN Database accession no. 102:220613 XP002262166 abstract; RNs 96644-06-3, 96644-07-4, 996644-08-5, 96644-09-6 &amp; UKRAINSKII KHMICHESKII ZHURNAL (RUSSIAN EDITION) (1984), 50(12), 1301-6 ,</p> <p>---</p> <p>-/-</p>	1

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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; LUK'YANCHIKOV, M. S. ET AL: "Synthesis of analogs of natural isoflavones via 2,4- dihydroxydeoxybenzoins" retrieved from STN Database accession no. 106:66952 XP002262167 abstract; RNs 106445-81-2, 106445-82-3, 96644-09-6 &amp; KHIMIYA PRIRODNYKH SOEDINENII (1985), (6), 781-4 ,</p> <p>---</p>	1
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; YUE, BAOZHEN ET AL: "Studies on flavonoids. VI. Synthesis of the 8-bromo-4',7-dihydroxyisoflavone" retrieved from STN Database accession no. 109:210759 XP002262168 abstract; RNs 117375-27-6, 117375-25-4 &amp; GAODENG XUEXIAO HUAXUE XUEBAO (1988), 9(3), 292-4 ,</p> <p>---</p>	1
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; JOSHI, S. C. ET AL: "Studies in the synthesis of furochromones. Part VIII. Synthesis of furoisoflavones" retrieved from STN Database accession no. 111:57342 XP002262169 abstract; RN 19816-31-0 &amp; INDIAN JOURNAL OF CHEMISTRY, SECTION B: ORGANIC CHEMISTRY INCLUDING MEDICINAL CHEMISTRY (1988), 27B(9), 806-10 ,</p> <p>---</p> <p>-/-</p>	1,2,6

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Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; KHILYA, V. P. ET AL: "Reaction of isoflavones and their 4-thioxo analogs with hydroxylamine" retrieved from STN Database accession no. 113:231246 XP002262170 abstract; RNs 129415-01-6, 129415-02-7 &amp; UKRAINSKII KHIMICHESKII ZHURNAL (RUSSIAN EDITION) (1990), 56(3), 280-6 ,</p> <p>---</p> <p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; YUE, BAOZHEN ET AL: "Studies on flavonoids. (XIV). Debromination reaction in the synthesis of bromoisoflavones" retrieved from STN Database accession no. 113:78089 XP002262171 abstract; RN 128672-41-3 &amp; GAODENG XUEXIAO HUAXUE XUEBAO (1990), 11(1), 99-101 ,</p> <p>---</p> <p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; VASIL'EV, S. A. ET AL: "Synthesis and anabolic action of modified isoflavones" retrieved from STN Database accession no. 114:81319 XP002262214 abstract; RN 127526-39-0 &amp; KHIMIKO-FARMATSEVTICHESKII ZHURNAL (1990), 24(9), 38-41 ,</p> <p>---</p> <p>-/-</p>	1
X		1,3,5,6
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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; KITAGAWA, MASAYUKI ET AL: "Aryloxyacetic acid diuretics with uricosuric activity. II. Substituted '(4-oxo-4H-1-benzopyran-7-yl)oxy!acetic acids and the related compounds" retrieved from STN Database accession no. 116:106034 XPOO2262172 abstract; RN 139027-56-8 &amp; CHEMICAL &amp; PHARMACEUTICAL BULLETIN (1991), 39(10), 2681-90 ,</p> <p>---</p>	1
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; WAEHAELAE, KRISTINA ET AL: "Synthesis and labeling of isoflavone phytoestrogens, including daidzein and genistein" retrieved from STN Database accession no. 122:187165 XPOO2262173 abstract; RNs 63909-40-0, 139256-06-7, 139256-08-9 &amp; PROCEEDINGS OF THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE (1995), 208(1), 27-32 ,</p> <p>---</p>	1
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; JAIN, L. ET AL: "Flavonoids from <i>Eschscholzia californica</i>" retrieved from STN Database accession no. 124:112475 XPOO2262215 abstract; RN 1891-01-6 &amp; PHYTOCHEMISTRY (1996), 41(2), 661-2 ,</p> <p>---</p>	1,5
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; YI, YIJUN ET AL: "Studies on chemical constituents of <i>Smilax glabra Roxb.</i> (IV)" retrieved from STN Database accession no. 130:349701 XPOO2262174 abstract; 18086-40-3 &amp; YAOXUE XUEBAO (1998), 33(11), 873-875 ,</p> <p>---</p> <p>-/-</p>	1,5

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X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; LEHMANN, L. ET AL: "Studies on biological activities of isoflavones in cultivated V79 cells" retrieved from STN Database accession no. 131:242242 XP002262175 abstract; RN 63909-40-0 &amp; LEBENSMITTELCHEMIE (1999), 53(5), 124 ,</p> <p>---</p>	1,5
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; ELSOHLY, HALA N. ET AL: "Antigiardial isoflavones from Machaerium aristulatum" retrieved from STN Database accession no. 131:99905 XP002262176 cited in the application abstract &amp; PLANTA MEDICA (1999), 65(5), 490 , 1999,</p> <p>---</p>	1,5,15
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; BELMAR, J. ET AL: "Synthesis of new mesogenic compounds having the isoflavone core group" retrieved from STN Database accession no. 130:189718 XP002262177 abstract; RN 220599-51-9 &amp; LIQUID CRYSTALS (1999), 26(1), 75-81 ,</p> <p>---</p>	1,5
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; TRAXLER, PETER ET AL: "Use of a Pharmacophore Model for the Design of EGFR Tyrosine Kinase Inhibitors: Isoflavones and 3-Phenyl-4(1H)-quinolones" retrieved from STN Database accession no. 130:332267 XP002262216 abstract; RN 224426-56-6 &amp; JOURNAL OF MEDICINAL CHEMISTRY (1999), 42(6), 1018-1026 ,</p> <p>---</p>	1,6

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X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; LIU, PENG ET AL: "Studies on synthesis and antitumor activities of soybean isoflavones and their derivatives" retrieved from STN Database accession no. 134:246935 XP002262178 abstract; RNs 77316-78-0, 96644-05-2 &amp; YAOXUE XUEBAO (2000), 35(8), 583-586 ,</p> <p>---</p> <p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; LIU, PENG ET AL: "1H NMR studies on synthetic isoflavones with p-substituents on B ring" retrieved from STN Database accession no. 134:147420 XP002262217 abstract; RN 15584-10-8 &amp; GAODENG XUEXIAO HUAXUE XUEBAO (2000), 21(11), 1671-1674 ,</p> <p>---</p> <p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; SEPULVEDA-BOZA, SILVIA ET AL: "The preparation of new isoflavones" retrieved from STN Database accession no. 135:288603 XP002262179 abstract; RN 116718-51-5 &amp; SYNTHETIC COMMUNICATIONS (2001), 31(12), 1933-1940 ,</p> <p>---</p> <p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; VARGA, MARTON ET AL: "Stability and chemical reactivity of 7-isopropoxyisoflavone (ipriflavone)" retrieved from STN Database accession no. 136:85693 XP002262180 abstract; RNs 385817-63-0/-68-5/-74-3, 385818-00-8/-05-3/-12-2/-18-8 &amp; EUROPEAN JOURNAL OF ORGANIC CHEMISTRY (2001), (20), 3911-3920 ,</p> <p>---</p>	1,6
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X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; LEI, YINGJIE ET AL: "Synthesis and preliminary studies on bioactivities of 7- hydroxy-4'-methylisoflavone" retrieved from STN Database accession no. 137:185330 XP002262181 abstract; RN 449175-73-9 &amp; ZHONGGUO YAOWU HUAXUE ZAZHI (2001), 11(5), 270-273 ,</p> <p>---</p>	1,7,13
X	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; SHIRATAKI, YOSHIAKI ET AL: "Relationship between cytotoxic activity and radical intensity of isoflavones from Sophora species" retrieved from STN Database accession no. 137:72561 XP002262218 abstract; RN 21913-98-4 &amp; ANTICANCER RESEARCH (2001), 21(4A), 2643-2648 ,</p> <p>---</p>	1,5
X,P	<p>DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; LIAO, XIAN-WEI ET AL: "Theoretical study of nuclear magnetic resonance spectra of isoflavone derivatives with m-substituents on B ring" retrieved from STN Database accession no. 138:221080 XP002262182 abstract; RNs 501124-42-1, 488849-74-7 &amp; SICHUAN SHIFAN DAXUE XUEBAO, ZIRAN KEXUEBAN (2002), 25(6), 632-636 ,</p> <p>---</p> <p>-/-</p>	1,6

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X,P	DATABASE CA 'Online! CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; MINENO, T. ET AL: "Solution-phase parallel synthesis of an isoflavone library for the discovery of novel antigiardial agents" retrieved from STN Database accession no. 138:4433 CA XP002262183 abstract; RNs 477217-61-1/.../477218-25-0, 117375-27-6, 19816-31-0, 97318-31-5 & COMBINATORIAL CHEMISTRY AND HIGH THROUGHPUT SCREENING , vol. 5, no. 6, 2002, pages 481-487, -----	1